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News Release

Joint study looks at reducing risk of high altitude pulmonary edema

BETHESDA, Md. – Scientists from the Uniformed Services University of the Health Sciences here and the Marine Corps Mountain Warfare Training Center in Bridgeport, Calif., are looking at ways to reduce the impact that high altitudes have on soldiers working in mountainous terrain.

High altitude pulmonary edema, or fluid on the lungs, is a life-threatening altitude illness that occurs unpredictably in about 1 to 15 percent of people rapidly ascending above 10,000 feet. Immediate descent in altitude is the best method of treating HAPE once the illness presents itself. In some cases, however, despite the emergent condition of a climber suffering from HAPE, immediate evacuation may not be possible.

Findings from a recent high altitude study determined that administration of a readily available oral drug may be effective in treating this potentially fatal altitude illness. The study followed a group of 11 male subjects between the ages of 18 and 50, on a rapid ascent to 14,250 feet. All individuals manifest significant elevations in pulmonary artery pressures when ascending above 10,000 feet, with some individuals unexplainably developing extremely high increases. It is this marked pressure elevation that is believed to be the principle cause of HAPE.

On completion of the climb, climbers were given the oral medication and were evaluated with non-invasive sound waves whether or not the drug was effective in reducing pulmonary artery pressures.

“Such therapy can be life saving where immediate evacuation or descent may not be possible due to situational constraints, such as those that may be encountered in today’s military field environment,” said U.S. Navy Cmdr. Ivan K. Lesnik, principle investigator and assistant professor in USU’s Department of Anesthesiology and Department of Military and Emergency Medicine

“We conducted this study because of the uniqueness of military missions today requiring service members to function in hostile mountainous environments above 10,000 feet, such as in the mountains of Afghanistan,” said Lesnik, “often without having sufficient time to completely acclimate themselves.”

Lesnik noted that this protocol is a step in attempting to identify and develop effective and safe therapy for both military and civilian high altitude climbers at risk of and suffering from HAPE. Further studies by the joint team will focus on developing various additional “environmental countermeasures” aimed at reducing the impact that high altitude environments have on military mission performance.

USU was established by Congress under the Department of Defense in 1972 and has the nation’s only fully accredited federal school of medicine and graduate school of nursing. With its motto “Learning to Care for Those in Harm’s Way,” the university has a worldwide reputation as a center of excellence for military medical education and research.